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Appln. No.: 09/103,873

Amendment Dated June 11, 2004

Reply to Office Action of March 2, 2004

<u>Amendments to the Claims:</u> This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Previously Presented) A semiconductor device, comprising:

a capacitor provided on a supporting substrate and including a lower electrode, a dielectric layer, and an upper electrode, said dielectric layer being formed from a ferroelectric material;

a first interlayer insulating layer provided so as to cover the capacitor;

a first interconnect selectively provided on the first interlayer insulating layer and electrically connected to the capacitor through a first contact hole formed in the first interlayer insulating layer;

a second interlayer insulating layer consisting of an interlayer insulating film having a tensile stress provided on the first interconnect; and

a second interconnect selectively provided on the second interlayer insulating layer and electrically connected to the first interconnect through a second contact hole formed in the second interlayer insulating layer

2.-3. (Cancelled).

(Previously Presented) A semiconductor device according to claim 1, further comprising,

a passivation layer provided so as to cover the second interconnect, wherein the second interconnect is provided on the second interlayer insulating film so as to cover at least a part of the capacitor,

the passivation layer is formed from a laminate including a silicon oxide film and a silicon nitride film.

5. (Cancelled).

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- 6. (Original) A semiconductor device according to claim 1, wherein the first interconnect is formed from a laminate including titanium, titanium nitride, aluminum and titanium nitride; a laminate including titanium, titanium nitride and aluminum; a laminate including titanium, titanium tungsten, aluminum and titanium tungsten; or a laminate including titanium, titanium tungsten and aluminum.
- 7. (Previously Presented) A semiconductor device according to claim 1, wherein a Si-OH bond absorption coefficient of the second interlayer insulating layer at a wavelength corresponding to 3450 cm<sup>-1</sup> is 800 cm<sup>-1</sup> or less.
- 8. (Previously Presented) A semiconductor device according to claim 1, wherein the second interlayer insulating layer has a tensile stress of  $1 \times 10^7$  dyn/cm<sup>2</sup> to  $3 \times 10^9$  dyn/cm<sup>2</sup> inclusive.
- 9. (Previously Presented) A semiconductor device according to claim 1, wherein the second interlayer insulating layer has a thickness of 0.3 µm to 1 µm inclusive.
- 10. (Original) A semiconductor device according to claim 1, wherein the second interconnect is formed from a laminate including titanium, aluminum and titanium nitride; a laminate including titanium and aluminum; or a laminate including titanium, aluminum and titanium tungsten.
- 11. (Withdrawn) A method for fabricating a semiconductor device, comprising the steps of:

sequentially forming a lower electrode, a dielectric film, and an upper electrode on a supporting substrate having an integrated circuit, thereby forming a capacitor;

forming a first interlayer insulating film so as to cover the capacitor;

forming a first contact hole in the first interlayer insulating film;

selectively forming a first interconnect in the first contact hole and on a prescribed area of the first interlayer insulating form so as to be electrically connected to the integrated circuit and the capacitor;

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forming a second interlayer insulating film of ozone TEOS so as to cover the first interconnect;

subjecting the second interconnect to a first thermal treatment;

forming a second contact hole in the second interlayer insulating film;

selectively forming a second interconnect in the second contact hole and on a prescribed area of the second interlayer insulating film so as to be electrically connected to the first interconnect;

subjecting the second interconnect to a second thermal treatment; and forming a passivation layer so as to cover the second interconnect.

- 12. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the dielectric film is formed from either a dielectric material having a high dielectric constant or a ferroelectric material.
- 13. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, further comprising the step of etching back the second interlayer insulating film using the second interconnect as a mask to such an extent as to almost expose the first interconnect.
- 14. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the step of forming the second interconnect includes the step of forming the second interconnect so as to cover at least a part of the capacitor.
- 15. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein:

the passivation layer is formed of a laminate including a silicon oxide film and a silicon nitride film, and

the silicon oxide film is formed by normal-pressure CVD, low-pressure CVD or plasma CVD, with using silane, disilane or ozone TEOS, so as to have a tensile stress.

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16. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, further comprising the steps of:

after the first interconnect is formed, forming a hydrogen supplying layer on the first interconnect excluding an area where the capacitor is provided; and

performing a third thermal treatment.

- 17. (Withdrawn) A method for fabricating a semiconductor device according to claim 16, wherein the hydrogen supplying layer is formed from either silicon nitride or silicon nitride oxide by plasma CVD.
- 18. (Withdrawn) A method for fabricating a semiconductor device according to claim 16, wherein the third treatment performed after the formation of hydrogen supplying layer is performed at a temperature in the range of 300°C to 450°C inclusive.
- 19. (Withdrawn) A method for fabricating a semiconductor device according to claim 16, wherein the third treatment performed after the formation of the hydrogen supplying layer is performed in an oxygen atmosphere, a nitrogen atmosphere, an argon atmosphere or an atmosphere of a mixed gas thereof.
- 20. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the first interlayer insulating film is formed of silicon oxide by normal-pressure CVD or low-pressure CVD, with using silane, disilane or ozone TEOS.
- 21. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the first interlayer insulating film is formed of phosphorus-doped silicon oxide by normal-pressure DVD or low-pressure CVD.
- 22. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein an ozone concentration upon forming the second interlayer insulating film using ozone TEOS is set to be at 5.5% or more.

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- 23. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the second interlayer insulating film after being subjected with the first thermal treatment has a tensile stress of  $1 \times 10^7$  dyn/cm<sup>2</sup> to  $2 \times 10^9$  dyn/cm<sup>2</sup> inclusive.
- 24. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the first thermal treatment is performed at a temperature in the range of 300°C to 450°C inclusive.
- 25. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the first thermal treatment is performed in an atmosphere containing at least oxygen.
- 26. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the second thermal treatment is performed at a temperature in the range of 300°C to 450°C inclusive.
- 27. (Withdrawn) A method for fabricating a semiconductor device according to claim 11, wherein the second thermal treatment is performed in an atmosphere containing at least one of nitrogen, argon and helium.
- 28. (Cancelled)
- 29. (Previously Presented) The semiconductor device of claim 1 wherein the second interlayer insulating layer provides substantially flat step coverage of the first interconnect and the first interlayer insulating layer.
- 30. (Previously Presented) A semiconductor device, comprising:
- a capacitor provided on a supporting substrate and including a lower electrode, a dielectric layer, and an upper electrode, said dielectric layer including a remnant polarization of approximately 10  $\mu$ C/cm<sup>2</sup>;
  - a first interlayer insulating layer provided so as to cover the capacitor;

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a first interconnect selectively provided on the first interlayer insulating layer and electrically connected to the capacitor through a first contact hole formed in the first interlayer insulating layer;

a second interlayer insulating layer consisting of an interlayer insulating film having a tensile stress provided on the first interconnect; and

a second interconnect selectively provided on the second interlayer insulating layer and electrically connected to the first interconnect through a second contact hole formed in the second interlayer insulating layer.

31. (Previously Presented) A semiconductor device, comprising:

a capacitor provided on a supporting substrate and including a lower electrode, a dielectric layer, and an upper electrode, said dielectric layer including a remnant polarization of at least 10  $\mu$ C/cm2;

a first interlayer insulating layer provided so as to cover the capacitor;

a first interconnect selectively provided on the first interlayer insulating layer and electrically connected to the capacitor through a first contact hole formed in the first interlayer insulating layer;

a second interlayer insulating layer consisting of an interlayer insulating film having a tensile stress provided on the first interconnect; and

a second interconnect selectively provided on the second interlayer insulating layer and electrically connected to the first interconnect through a second contact hole formed in the second interlayer insulating layer.

- 32. (Cancelled).
- 33. (Currently Amended) A semiconductor device, comprising:

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a capacitor provided on a supporting substrate having an integrated circuit thereon and including a lower electrode, a dielectric film, and an upper electrode, said dielectric film being formed from either a dielectric material having a high dielectric constant or a ferroelectric material;

- a first interlayer insulating film provided so as to directly cover the capacitor;
- a first interconnect selectively provided on the first interlayer insulating film and electrically connected to the integrated circuit and the capacitor through a first contact hole formed in the first interlayer insulating film;
- a second interlayer insulating film having a tensile stress provided so as to directly cover the first interconnect and the first interlayer insulating film layer consisting of an interlayer insulating film having a tensile stress provided on the first interconnect;
- a second interconnect selectively provided on the second interlayer insulating <u>film-layer</u> and electrically connected to the first interconnect through a second contact hole formed in the second interlayer insulating <u>layerfilm</u>; and
  - a passivation layer provided so as to cover the second interconnect; and
- a hydrogen supplying layer provided between the first interconnect and the second interlayer insulating <u>layerfilm</u>\_excluding an area in which the capacitor is provided.
- 34. (Currently Amended) A semiconductor device, comprising:
- a capacitor provided on a supporting substrate having an integrated circuit thereon and including a lower electrode, a dielectric film, and an upper electrode;
- a first interlayer insulating film provided so as to directly cover the capacitor, the first interlayer insulating film having a tensile stress;
- a first interconnect selectively provided on the first interlayer insulating film and electrically connected to the integrated circuit and the capacitor through a contact hole formed in the first interlayer insulating film;

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a second interlayer insulating film having a tensile stress provided so as to directly cover the first interconnect and the first interlayer insulating film layer consisting of an interlayer insulating film having a tensile stress provided on the first interconnect;

a second interconnect selectively provided on the second interlayer insulating <u>layerfilm</u> and electrically connected to the first interconnect through a second contact hole formed in the second interlayer insulating <u>layerfilm</u>;

a passivation layer provided so as to cover the second interconnect; and

a hydrogen supplying layer provided between the first interconnect and the second interlayer insulating <u>layerfilm</u> excluding an area in which the capacitor is provided.

- 35. (Previously Presented) The semiconductor device of claim 1, further comprising a passivation layer provided so as to cover the second interconnect.
- 36. (Previously Presented) The semiconductor device of claim 1, wherein the second interlayer insulating layer being a singular layer.
- 37. (Previously Presented) The semiconductor device of claim 1, wherein the second interlayer insulating layer forming of thermal ozone TEOS.
- 38. (Previously Presented) The semiconductor device of claim 1, further comprising the supporting substrate having an integrated circuit thereon.